



**Aalborg Universitet**

**AALBORG UNIVERSITY**  
DENMARK

## **Department of Civil Engineering**

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# DEPARTMENT OF CIVIL ENGINEERING

NEWS  
AND  
FIGURES  
2016



DEPARTMENT OF CIVIL ENGINEERING  
AALBORG UNIVERSITY

COLOPHON

TITLE:

DEPARTMENT OF CIVIL ENGINEERING,  
NEWS AND FIGURES 2016

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# WELCOME

Looking back at 2016, construction of our new building on Thomas Manns Vej 23 was the dominant focus of the year. After 10 years of decisions, discussions, planning, design and construction, the building was supposed to be ready for occupation in summer 2016. We closed our laboratories on Sohngaardsholmsvej in early March, disassembled all laboratory installations and setups, packed them and prepared the move. All offices on Sofiendalsvej were packed during August. Unfortunately, the contractor was not able to stay on schedule despite his ongoing claims to the contrary.

All scientific and administrative employees moved into our new building in August and the students in December (cf. p. 18). Laboratory areas are still not finalized in the building so we have started unpacking and reconstructing the laboratory installations on Sohngaardsholmsvej. The new laboratories are expected to be ready for use in summer 2017 – one year later than planned and promised.

Despite all our problems, the new building seems to be fantastic. The decor and atmosphere are great and provide us with new opportunities for further developing experiments, learning, innovation and cooperation.

One of our expanding courses has been the Master's Programme in Risk and Safety Management. We have hired Professor Michael Faber Nielsen to strengthen this area further. Finally, we launched an initiative to strengthen the unity and common culture among the building users. Follow us @civilengineeringau on Instagram and use #iamcivil (cf. p. 12).

A handwritten signature in dark ink, reading "Peter Frigaard". The signature is fluid and cursive, with the first name "Peter" and last name "Frigaard" clearly distinguishable.

Peter Frigaard  
Head of department

# MEET THE MANAGEMENT



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# OUR DEPARTMENT

The Department of Civil Engineering focuses on research concentrated on developing and impacting the building sector in the future. Research and teaching are conducted in areas which centre on understanding environmental causality and planning people's physical environment. We undertake contractual research projects for government institutions as well as private companies.

Regarding both student and research projects, we are widely experienced in collaborating with external partners. We mainly collaborate with companies within the building and construction sector, and we have a profound knowledge of the demands and legislation within this area.

New projects and co-operations are always welcome as new thoughts and ideas are best developed through dialogue!



## OUR RESEARCH DIVISIONS

- Architectural Engineering
- Reliability, Dynamics and Marine Engineering
- Structures, Materials and Geotechnics
- Transportation Engineering
- Water and Environment

# DIVISION OF ARCHITECTURAL ENGINEERING

## Research field

We work with research and education in analysis, design, construction and operation of engineering systems for commercial, industrial and institutional facilities.

Our main research areas are energy-efficient building design, indoor environment, construction management and building informatics.

## Research groups

- Building Informatics
- Construction Management
- Indoor Environmental Engineering
- Strategic Research Centre on Zero Energy Buildings (ZEB)

## HEAD OF DIVISION

Kjeld Svdt

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## **DIVISION OF RELIABILITY, DYNAMICS AND MARINE ENGINEERING**

### **Research field**

We centre our research and teaching activities around the challenges related to the design and construction of large civil structures, port facilities, offshore structures, wind turbines and wave energy converters. We are especially focused on risk and reliability, structural dynamics, analysis of wind-generated waves, stability studies of breakwater structures and modelling, development and evaluation of various wave energy converters, power production and structural loads.

### **Research groups**

- Coastal Engineering Research Group
- Reliability and Risk Analysis Research Group
- Structural Dynamics Research Group
- Wave Energy Research Group



### **HEAD OF DIVISION**

Jens Peter Kofoed  
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Phone: +45 9940 8474



# **DIVISION OF STRUCTURES, MATERIALS AND GEOTECHNICS**

## **Research field**

Our research field revolves around both theoretical and numerical modelling and experimental verification within the field of structural mechanics, structural materials and geotechnics.

## **Research groups**

- Advanced Structural Engineering
  - Innovative Structures
  - Geotechnical Engineering



## **HEAD OF DIVISION**

Lars Damkilde

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## **DIVISION OF TRANSPORTATION ENGINEERING**

### **Research field**

Our research and teaching are centred around Intelligent Transportation Systems (ITS) and Traffic Management, Traffic Safety, Transportation Planning, Public Transportation in built-up areas and in open areas, Big Data within Transportation, Freight Transport and ITS, Building Information Modelling (BIM) for infrastructure, Development of the Industrial Foundation Class (IFC) standard for roads and Geometric design and construction of roads.

### **Research groups**

- Traffic Research Group



### **HEAD OF DIVISION**

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# DIVISION OF WATER AND ENVIRONMENT

## Research field

The majority of our research is in urban and rural environmental processes. Our focus points are hydrology and hydraulics of the urban environment, precipitation forecast, biological and chemical processes in sewerage systems and drinking water supply systems, stormwater quality management, soil physics and physical geography mainly aimed at environmental and resource issues.

## Research groups

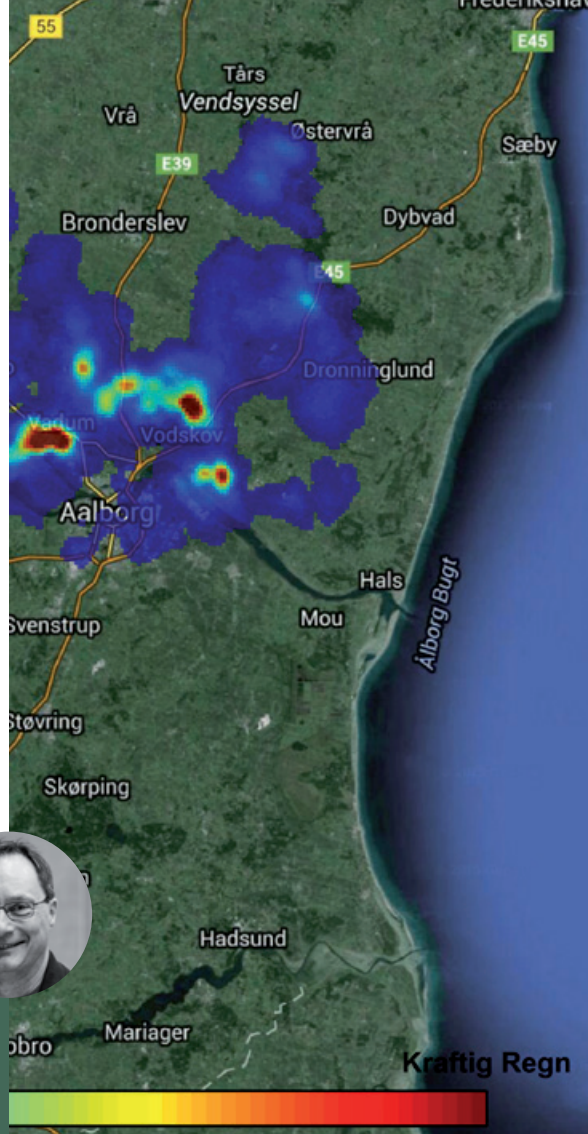
- Water and Environment

## HEAD OF DIVISION

Jes Vollertsen

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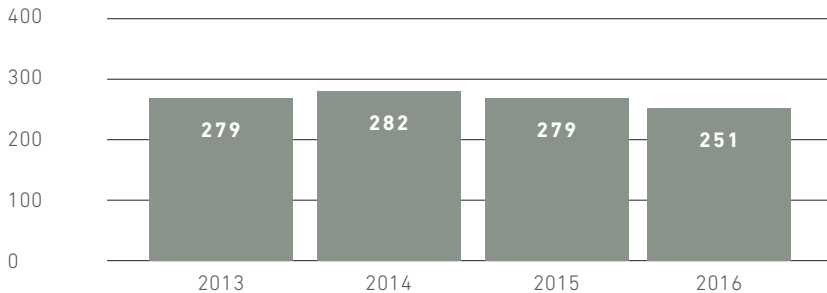
Phone: +45 9940 8504



# OUR RESEARCH

We are proud of the fact that our researchers at the Department of Civil Engineering are very productive individuals who produce a large amount of research publications each year. Below is the number of research publications that we have produced in the last couple of years. All of our research is registered in the Research Database of Aalborg University (VBN). In VBN, you can find research publications, research projects, activities, press clippings and more.

## RESEARCH PUBLICATIONS\*



\*The figures should be accepted with caution as they will typically increase as reporting is carried out continuously, including previous years.

VBN.AAU.DK

# #IAMCIVIL



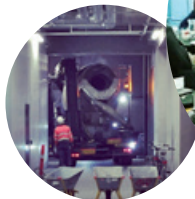
In December 2016, we decided to create a visual platform for presenting our department and the culture here. We wanted people to be able to see life at AAU and specifically at our department.

So we have established @civilengineeringaau in the Instagram App where we will depict the department through the eyes of the staff and the students alike.



In creating this Instagram account, we also use #iamcivil as a joint marker for this community and culture. And we invite students, staff and guests at the department to use this hashtag – #iamcivil.

Follow us @civilengineeringaau on Instagram.







## OUR LABORATORIES

Our laboratories play a major role in our research. Numerous experiments are carried out in our laboratories, which offer the best equipment along with a knowledgeable staff.

While some equipment can be adjusted for an experiment, other equipment can be built specifically for a project or task.

### **The laboratories at the Department of Civil Engineering**

- Concrete Research
- Geotechnical Engineering
- Hydraulics and Coastal engineering
- Indoor Environmental Engineering
  - Physical Geography
  - Structural Research
- Traffic Research Laboratory



### **HEAD OF LABORATORIES**

Benjamin Nordahl Nielsen

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## OUR SECRETARIAT

Our administration unit, the secretariat, plays an essential role spanning across the entire department. They administer the internal economy, carry out preparatory work for the researchers, handle internal communication, handle the employees' welfare, manage the interests and obligations both internally and externally and administer all study-related tasks. Their work is an important supplement to the work carried out at the department.

### Teams

- Finance and Accounts
  - HR
- Information Office
  - Service
  - Study

### HEAD OF SECRETARIAT

Pernille Bisgaard Pedersen

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# OUR PHD PROGRAMME

The PhD programme constitutes an important part of the research done at the department. During the three-year duration of the programme, the PhD student will take part in courses and teaching. The research project will culminate in a PhD thesis, which will be defended in public by the PhD student.

Another branch of the programme is the Industrial PhD programme. Here, the student will be employed at a company where the research will have its origin so working hours are divided between the company and the department.

In 2016, the total of enrolled PhD students was 52.



PhD students, newly enrolled			PhD degrees awarded		
2014	2015	2016	2014	2015	2016
16	7	21	13	11	13

## FINISHED PHD STUDENTS IN 2016

**Malte Ahm**, Adjustment of rainfall estimates from weather radars using in-situ stormwater drainage sensors. **Kristina Thomassen**, Experimental Investigations of Tension Piles in Sand Subjected to Static and Cyclic Loading. **Malene Kirstine Holst**, Optimal Hospital Layout Design. **Mehdi Bayat**, Stiffness and Damping related to steady state soil-structure Interaction of monopiles. **Sarah Firouzanbandpey**, Reliability-Based Design of Wind Turbine Foundations: Geotechnical Site Assessment. **Line Røseth Karlsen**, Design methodology and criteria for daylight and thermal comfort in nearly-zero energy office buildings in Nordic climate. **Evelina Vaitkunaite**, Physical Modelling of Bucket Foundations Subjected to Axial Loading. **Søren Dam Nielsen**, Transient Monotonic and Cyclic Load Effects on Mono Bucket Foundations. **Rikke Holmsgaard**, Physical Modelling of Silt in Relation to Offshore Wind Turbines. **Emil Smed Sørensen**, Numerical simulation of non-linear phenomena in geotechnical engineering. **Chen Zhang**, Diffuse ceiling ventilation: Air distribution and thermal comfort. **Prasad Chougule**, Innovative Design of a Darrieus Straight Bladed Vertical Axis Wind Turbine by using Multi Element Airfoil. **Søren Bøgelund Madsen**, Numerical simulations of the roller expanded tube-tubesheet joint

# OUR TEACHING

Besides from our research staff, 15 % of the teaching is given by external partners. We emphasise that our students come into contact with the surrounding world via e.g. guest lectures or actual courses held by co-operation partners.

This not only creates valuable bonds between our students and potential future employers; it also facilitates knowledge sharing at a high level between the academic universe and industry to the benefit of society. You can find information about the study programmes and courses in Aalborg University's studyguide.



**STUDYGUIDE.**  
**AAU.DK**

## Graduates from the Study Board of Civil Engineering

	2013	2014	2015	2016
Bachelor degree	79	64	66	71
Master's degree	100	133	151	201
In total	179	179	217	272

# MOVING IN

Our new building has been in development for a long time, during which it has changed size, shape, location and vision several times. But in September, we finally moved the staff from two of our temporary addresses into our new building on Thomas Manns Vej 23 at the AAU main campus.

However, the building is still incomplete, and construction is still being done in the building. Most notably, our ground floor is unfinished and, as such, not in use. That means that our laboratories and our laboratory staff still remain at Sohngaardsholmsvej 57L. We hope that we will be able to relocate them to the new building in 2017.

In December, the students joined us at our new address, and they were introduced to their new teaching environment. We celebrated this occasion with hotdogs and games.



# 2016 HIGHLIGHTS

## ANNIVERSARY

In March, Professor Emeritus Palle Thoft-Christensen celebrated 50 years in the service of the state. And in November, Lisbeth Fredberg celebrated 25 years in the service of the state.

PALLE THOFT-CHRISTENSEN



## MOVING IN – STAFF

During September, we moved into our new building at the main AAU campus. Our laboratories still remain at Sohngaardsholmsvej as these are not completed in the new building.

## MOVING IN – STUDENTS

In December, the staff was joined by all the students who moved into the building as well.

## NEW HEAD OF DIVISION

Associate Professor Niels Agerholm became the new head of the Division of Transportation Engineering as of November 1.

NIELS AGERHOLM



MOVING IN





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